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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* HYUNG-BOK LEE and BYOUNG-HYUN KANG

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Appeal 2009-005219  
Application 10/728,850  
Technology Center 2800

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Decided: October 15, 2009

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Before JOHN C. MARTIN, JOSEPH F. RUGGIERO, and ROBERT E.  
NAPPI, *Administrative Patent Judges*.

NAPPI, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 6(b) of the rejection of claims 1 through 11, 13 through 17, 19, and 20.

We affirm-in-part.

### INVENTION

The invention is directed to a battery unit with two or more cells interconnected together and a single safety circuit board for all of the cells. See page 1 of Appellants' Specification. Claim 1 is reproduced below:

1. A pouch-type secondary battery unit, comprising:
  - a first secondary battery cell comprising a first secondary battery body and a first case, the first secondary battery body being disposed inside the first case, the first secondary battery cell further comprising a first positive electrode terminal and a first negative electrode terminal perforating out from said first case;
  - a second secondary battery cell comprising a second secondary battery body and a second case, the second secondary battery body being disposed within the second case, the second secondary battery cell further comprising a second positive electrode terminal and a second negative electrode terminal perforating out from said second case; and
  - a safety circuit board disposed in an external void within said battery unit, said external void being defined as being in between the first and second secondary battery cells, the safety circuit being electrically connected to the first and second positive electrode terminals and to the first and second negative electrode terminals.

### REFERENCE

Nortoft

US 6,773,848 B1

Aug. 10, 2004

## REJECTION AT ISSUE

The Examiner has rejected claims 1 through 11, 13 through 17, 19, and 20 under 35 U.S.C. § 102(e) as being anticipated by Nortoft. The Examiner's rejection is on pages 3 through 7 of the Answer.<sup>1</sup>

## ISSUES

### *Claims 1 and 4*

Appellants argue on pages 17 and 18 of the Brief<sup>2</sup> and pages 13 through 15 of the Reply Brief that the Examiner's rejection of claim 1 is in error. Appellants' contentions directed to the rejection of claim 1 present us with the issue: have Appellants shown that the Examiner erred in finding that Nortoft teaches an external void between a first and second battery cell and that a circuit board is disposed within the external void?

### *Claim 2*

Appellants argue on pages 19 and 20 of the Brief and pages 15 through 17 of the Reply Brief that the Examiner's rejection of claim 2 is in error. Appellants' contentions directed to the rejection of claim 2 present us with the issue: have Appellants shown that the Examiner erred in finding that Nortoft teaches a battery case body and case cover?

### *Claim 3*

Appellants argue on pages 20 and 21 of the Brief and pages 17 through 18 of the Reply Brief that the Examiner's rejection of claim 3 is in

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<sup>1</sup> Throughout the opinion we refer to the Answer mailed January 28, 2008.

<sup>2</sup> Throughout the opinion we refer to the Brief dated October 4, 2007, and Reply Brief dated March 26, 2008.

error. Appellants' contentions directed to the rejection of claim 3 present us with the issue: have Appellants shown that the Examiner erred in finding that Nortoft teaches a battery case body with a flanged portion?

*Claim 5*

Appellants argue on pages 21 and 22 of the Brief and pages 18 through 19 of the Reply Brief that the Examiner's rejection of claim 5 is in error. Appellants' contentions directed to the rejection of claim 5 present us with the issue: have Appellants shown that the Examiner erred in finding that Nortoft teaches batteries with helically wound positive and negative electrode plates?

*Claims 6 through 11, and 13 through 16*

Appellants argue on pages 22 through 24 of the Brief, and pages 19 through 22 of the Reply Brief that the Examiner's rejection of independent claim 6 is in error. Appellants, on pages 24 and 25 of the Brief, present similar arguments directed to the rejection of independent claim 10. Appellants' contentions directed to the rejection of independent claims 6 and 10 present us with the issue: have Appellants shown that the Examiner erred in finding that Nortoft teaches that the battery case body has a plurality of spaces with a battery cell disposed in each of the spaces?

*Claims 17, 19, and 20*

Appellants argue on pages 25 through 26 of the Brief and page 24 of the Reply Brief that the Examiner's rejection of claim 17 is in error. Appellants' contentions directed to the rejection of claim 17 present us with

the same issue as discussed with respect to claim 10 and the additional issue: have Appellants shown that the Examiner erred in finding that Nortoft teaches that the circuit board is disposed in such a way as to not add to the size of the battery unit?

### PRINCIPLES OF LAW

Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. *RCA Corp. v. Appl. Dig. Data Sys., Inc.*, 730 F.2d 1440, 1444 (Fed. Cir. 1984); *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554 (Fed. Cir. 1983).

### FINDINGS OF FACT

#### Nortoft

1. Nortoft teaches a battery unit made up of several cells and a printed circuit board. Abstract.
2. Nortoft teaches that lithium-ion batteries can be formed of “flattened ‘jelly-rolls’ of interleaved electrodes and electrolyte, the thus formed electrical cell being packaged in a flexible pack.” Col. 1, ll. 12-15.
3. When a number of cells are connected in series, the electric components are packaged with the cell to provide voltage equalization during charging. Col. 1, ll. 49-60.

4. Nortoft teaches an arrangement where the cells and circuit board are connected and the assembly is folded to provide protection of the circuit board. Col. 3, ll. 8-15, *see, e.g.*, Figure 2*b*, circuit board item 5 and cell items 1 and 1'.
5. As is seen in Figures 1*b* and 2*b* the packaging of the battery is tapered on one side, the side where the terminals exit the packaging. The electrical components are shown as item 4. The taper is described as "creating a recess between adjacent folded cells into which the electrical components can be positioned." Further, the advantage of this arrangement is that "the space taken up by the cell pair is not increased to any significant degree." Col. 4, ll. 22-25, 40-51.
6. In the embodiment of Figure 2*b* there is a circuit board between the two batteries to which electrical components are connected. As is seen in Figure 2*b* the electrical components in this embodiment are mounted on the circuit board such that they are in the space created by the tapered ends of the battery cells. Col. 5, ll. 32-40.
7. The flexible packaging around the wound cells is described as being made by folding material around the cells and sealing the edges. Col. 8, ll. 23-31.

8. In one embodiment, the cells are welded or soldered to the circuit board. In another embodiment, the packaging around the cells includes a flap, item 14, which extends beyond the seal of the battery package. This flap is shown in figure 6a. The purpose of the flap is to provide a mechanical connection of the battery to the printed circuit board using a sealing material. Col. 5, ll. 14-16, col. 8, ll. 41-50.

## ANALYSIS

### *Claims 1 and 4.*

Appellants have not persuaded us that the Examiner erred in finding that Nortoft teaches an external void between a first and second battery cell and that a circuit board is disposed within the external void. Claim 1 recites a safety circuit disposed in an external void, where “said external void being defined as being in between the first and second secondary battery cells.” Thus, claim 1 defines the external void as being between the battery cells, claim 1 does not however specify that the void is created when the cells are touching. Thus, the scope of the claim includes that the cells may be spaced apart and the space between the cells is a void between the cells which is external to the cells. Further, the claim does not identify that the entire circuit board is disposed in the external void, thus the scope of the claim is not limited to the entire circuit board being within the external void. Appellants’ arguments directed to the term “disposed” rely upon a dictionary definition of the term “dispose.” Brief 18. We note that the definition, to put in a particular place, does not mean that the article put in the place occupies *only* that space.



Appellants' arguments in the Brief assert that Nortoft's arrangement of the circuit board being sandwiched between the two batteries is different than being disposed between the two batteries. Brief 17 and 18. We are not persuaded by Appellants' arguments as the claim does not bear out such a distinction. As discussed above, the claim does not preclude the space between spaced apart batteries from being the claimed external void, thus, the circuit board sandwiched between the batteries is in the external void. Further, even if the limitation external void were construed to be a space that would be formed between the battery even if the cells were directly touching, as shown in Appellants Figure 3, we find that Nortoft teaches the arrangement. As discussed above the claim does not require the entire circuit board to be in the void. We find that Nortoft teaches an external void created by the tapered ends of the batteries and that a portion of the circuit board is in this void. Facts 5 and 6. Accordingly, we sustain the Examiner's rejection of claims 1 and 4 as being unpatentable over Nortoft.

### *Claim 2*

Appellants have not persuaded us that the Examiner erred in finding that Nortoft teaches a battery case body and case cover. Claim 2 recites a case body for accommodating a battery and a case cover coupled to the body to seal the battery body. Appellants assert that the flexible packages can be deemed equivalent to the claimed case body but not the case cover. Brief 19. We are not persuaded by Appellants' arguments. The Examiner has found, on page 9 of the Answer, that the flexible package is the equivalent to the case and cover. We concur with the Examiner's findings. The claim identifies that the case has a space to hold the battery and a cover to seal the

battery. We concur with the Examiner's finding. We consider the portion of the flexible package which covers one side (top) of the battery to be the claimed case body, and the portion which covers the other side (bottom) to be the claimed case cover. Nortoft teaches that the flexible package is large enough to cover the batteries (thus, there is space to accommodate the battery) and the two sides of the flexible package are sealed around the battery to seal the battery in the package. Fact 7. Accordingly, we sustain the Examiner's rejection claim 2 as being anticipated by Nortoft.

*Claim 3*

Appellants have not persuaded us that the Examiner erred in finding that Nortoft teaches a battery case body with a flanged portion. Claim 3 recites that the terminals of the battery perforate the case at the flanged portion of the body. Appellants assert that a flange is “[a] protruding rim, edge, rib, or collar used to strengthen an object, hold it in place, or attach it to another object.” Brief 20-21. Appellants argue that Nortoft teaches that there is a rim on the battery body of Nortoft, but since Nortoft's body is flexible it is not used to strengthen the case or is used to hold in place or attach the battery to another object. Brief 21. We disagree with Appellants' characterization of Nortoft. Specifically, Nortoft teaches that the side of the battery case which has the terminals protruding also has a flap item 14 which is used to attach the battery to the circuit board. Fact 8. Thus, we find that the battery case has a flange item 14, which is used to hold it in place and attach it to another object. Accordingly, we sustain the Examiner's rejection of claim 3 as being anticipated by Nortoft.

*Claim 5*

Appellants have not persuaded us that the Examiner erred in finding that Nortoft teaches batteries with helically wound positive and negative electrode plates. Claim 5 recites that the batteries are helically wound positive and negative electrode plates. Appellants' Specification on page 8 describes a battery cell made by "helically winding strip-shaped positive and negative electrode plates, as illustrated in FIG 2." Spec. 8: 3-4. We note that Appellants' Figure 2 depicts electrodes that have been wrapped around each other in an arrangement that looks like a flattened or squashed roll.

Appellants argue that Nortoft's Figures 4*e* and 5*d* do not depict a helically wound positive and negative batteries. Brief 22. While we concur that Figures 4*e* and 5*d* do not depict that the electrodes are helically wound, we nonetheless find that Nortoft teaches that the battery cells are helically wound. Nortoft teaches that the Lithium-ion battery cells in the flexible cases, such as are depicted in Figures 4*e* and 5*d*, can be formed by flattened rolls of interleaved electrodes. Fact 2. Given Appellants' description of what constitutes a helically wound electrode, we consider the flattened rolls of interleaved electrodes of Nortoft to meet the claimed helically wound electrodes of claim 6. Accordingly, Appellants' arguments have not persuaded us that the Examiner erred in finding that Nortoft teaches the limitation of helically wound electrodes. Accordingly we sustain the Examiner's rejection of claim 6 as being anticipated by Nortoft.

*Claims 6 through 11 and 13 through 16*

Appellants have persuaded us that the Examiner erred in finding that Nortoft teaches that the battery case body has a plurality of spaces with a battery cell disposed in each of the spaces. Independent claim 6 recites that the battery case comprises a plurality of spaces and that there are a plurality of batteries disposed in corresponding on of the spaces. Independent claim 10 recites a similar limitation. Thus, the scope of these claims includes that there is one case with a plurality of batteries.

In rejecting these claims the Examiner finds that Figure 3a and the accompanying description in column 3 of Nortoft teach a case with plural spaces. Answer 5. We disagree with the Examiner's findings. As discussed *supra* with respect to claim 2 we concur with the Examiner's finding that the flexible package is the equivalent to the claimed case and cover. However, we do not find that the embodiment of Figure 3a or any disclosure of Nortoft teaches that the flexible package contains more than one battery. Nortoft teaches one battery is in each package and that the packages are soldered, welded or mechanically attached with a flap and sealing material to the circuit board. Fact 8. It is through attaching the batteries to the circuit board that the arrangement of Figure 3a is made. Thus, the plurality of batteries in Figure 3a are not in the same case but rather in three separate cases that are attached to a circuit board between them. As such, we do not find that the Examiner has shown that all of the limitations of independent claims 6 and 10 are taught by Nortoft. Claims 7 through 9, 11, and 13 through 16 are dependent upon one of claims 6 and 10. Accordingly, we will not sustain the Examiner's rejection of claims 6 through 16 as anticipated by Nortoft.

*Claims 17, 19, and 20*

Appellants' arguments have not persuaded us of error in the Examiner's rejection of independent claim 17. Appellants argue that the rejection of claim 17 is erroneous for the reasons discussed with respect to claim 10. Brief 26. We note however, that claim 17 does not recite a limitation directed to the case having plural spaces for plural batteries as discussed above with respect to claim 10. Thus, claims 10 and 17 are of different scope and the error we noted above in the rejection of claim 10 is not present in the rejection of claim 17.

Appellants further assert that claim 17 recites that "said safety device being disposed in such a way as to not add to the size of the battery unit." Thus, Appellants conclude that the claim is not met by Nortoft's arrangement where the circuit board is sandwiched between the battery cells as Nortoft's arrangement the thickness is increased. Brief 26. We are not persuaded by this argument. Claim 17 recites that the safety circuit is disposed in a way that does not add to the size of the battery unit, however the claim does not provide a comparison as to what the increased size is in comparison to. Appellants' arguments imply that the limitation precludes increase in thickness of battery unit to be thicker than that of the combination of the battery cells. However, we do not find that the claim is so limited; in the absence of a basis of comparison, any arrangement that will not increase the size meets the claim. As discussed above with respect to claim 1, we find ample evidence to support the Examiner's finding that Nortoft teaches a circuit board disposed in an external void. Further, Nortoft teaches that the components of the circuit board are disposed between the cells and the taper of the cells so that the space of the cell pair is not

increased. Fact 5. When viewing Figures 1*a*, 2*b* and 3*b* it is apparent that this is referring to the circuit board and elements not extending beyond the flanges of the battery cells. Thus, we find that the arrangement of Nortoft is such that it will not add to the size of the battery unit as claimed, and the fact that the battery unit is thicker than if the circuit board were not mounted between the cells is not pertinent as the claim is not so limited. Thus, Appellants' arguments have not persuaded us of error in the Examiner's rejection of claim 17. Claims 19 and 20 are dependent upon claim 17. Accordingly, we sustain the Examiner's rejection of claims 17, 19 and 20 as anticipated by Nortoft.

#### CONCLUSION

Appellants have not persuaded us of error in the Examiner's rejections of claims 1 through 5, 17, 19, and 20. However, Appellants' arguments have persuaded us of error in the Examiner's rejections of claims 6 through 11 and 13 through 16.

#### ORDER

The decision of the Examiner to reject claims 1 through 11, 13 through 17, 19, and 20 is affirmed-in-part.

Appeal 2009-005219  
Application 10/728,850

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

ELD

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